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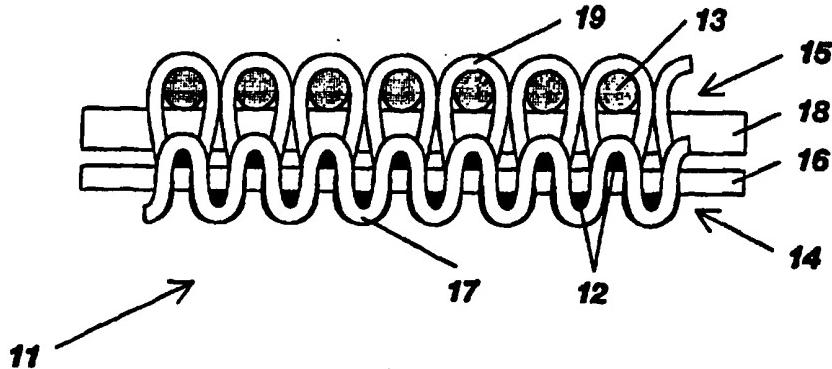
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(21) International Application Number: PCT/NL97/00492 (22) International Filing Date: 29 August 1997 (29.08.97) (71) Applicant (<i>for all designated States except US</i>): JEROEN VINKEN BEHEER B.V. [NL/NL]; Voortsepad 6A, NL-5081 ZK Hilvarenbeek (NL). (71)(72) Applicant and Inventor: DE HAIR, Johannes, Henricus, Maria [NL/NL]; Willibrordlaan 23, NL-5096 BE Hulsel (NL). (72) Inventor; and (75) Inventor/Applicant (<i>for US only</i>): VINKEN, Jeroen, Adrianus, Joannes, Maria [NL/NL]; Voortsepad 6A, NL-5081 ZK Hilvarenbeek (NL). (74) Agent: IEMENSCHOT, J., A.; Van Exter Polak & Charlouis B.V., P.O. Box 3241, NL-2280 GE Rijswijk (NL).	(81) Designated States: JP, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>	

(54) Title: FABRIC WOVEN IN THE FORM OF A CLOTH



(57) Abstract

An improved fabric (11) consists of a so-called double cloth, formed by weaving tightly together, by means of binding warp threads (19), a lower cloth (14) consisting of weft threads (12) and warp threads (16, 17), and an upper cloth (15) consisting of weft threads (13) and warp threads (18, 19). The result is a compact and economically attractive fabric. In the form of covering material (carpet), the fabric has many possible designs and optional colour and material changes.

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Fabric woven in the form of a cloth.

The invention relates to a fabric woven in the form of a cloth, which is designed as a double-cloth structure, comprising a lower cloth and an upper cloth, both woven with a system of warp and weft threads, the lower cloth and 5 upper cloth being joined together by means of binding warp threads.

Fabrics are known in the form of carpet, comprising a base or lower cloth on which a so-called pile covering is arranged by means of various techniques. The carpet is a 10 single cloth, with a looped or cut pile connected to and therefore anchored on the base cloth.

An exception to this is formed by flat-cloth carpet designs made from coir, sisal, paper, wool and the like, the design consisting solely of warp and weft threads of 15 this type of fibre. However, these are always single-cloth designs.

In carpet designs, a pile covering is formed on the so-called base cloth in the longitudinal direction of the carpet by utilizing various techniques, such as tufting, 20 weaving, sticking, knitting and the like.

This design method entails limitations to the shaping or patterning of the visible side:

- All effects must be produced by the longitudinal direction. In short-piled designs, these limitations 25 are extremely obvious.
- There are frequently problems in sufficiently covering the base cloth, since the weft threads of the base cloth also have to bind in the pile threads and thus these binding points remain visible, which is not 30 always acceptable.
- Covering these binding points always entails a higher pile weight.
- This higher pile weight also leads to higher material costs.
- 35 - Only limited dimensional stability can be achieved in the existing flat-cloth carpet designs.

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- Due to the fact that the pile thread forms the colour and thus also the pattern of the visible side and a large number of adjacent threads have to be taken from the longitudinal direction, a change in colour
5 involves considerable effort. Therefore, economic aspects dictate that large production series be used, in order to keep the costs of changing to a new colour or a different pattern as low as possible. This in turn has a disadvantageous effect on stock-keeping.
10 The existing, known carpet designs are saddled with the abovementioned drawbacks.

A fabric of the type mentioned at the outset is known from Dutch Patent No. 21413, in particular Fig. 4.

In this known fabric in the form of covering
15 material, a base or backing is woven to a two-sided fabric, for which purpose warp threads are present to which jute weft threads are fixed by means of binding warp threads which run over the weft threads of the two-sided fabric which are situated on the side of the backing. The weft
20 threads of the two-sided fabric are chenille threads. The known covering material is used in the form of chenille carpets, rugs and upholstery fabrics.

The object of the present invention is to provide an improved fabric with a very stable lower cloth, the
25 upper cloth and the lower cloth being joined together in a firm and robust manner.

This object is achieved according to the invention in that the fabric is designed as a flat cloth and in that the binding warp threads of the upper cloth also extend
30 through the lower cloth and, at the top side and the underside of the fabric, run respectively over the weft threads of the upper cloth and under the weft threads of the lower cloth.

Preferably, both the warp thread system and the
35 weft thread system comprise a plurality of thread systems, the warp thread system preferably comprising at least four thread systems.

Advantageously, the warp threads and the weft threads of at least the upper cloth consist of wear-

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resistant material, so that the fabric can be used in circumstances where it is subject to considerable load.

Expediently, synthetic fibres, preferably polypropylene fibres, are used for the warp threads and the 5 weft threads.

Natural fibres, such as horse-hair, may also be used for the warp threads and the weft threads.

The invention is explained in more detail in the following exemplary embodiment with reference to the 10 drawing, in which:

Fig. 1 shows the weft cross-section of a known fabric in the form of covering material (carpet) with the looped-pile design;

Fig. 2 shows the weft cross-section of a known 15 fabric in the form of covering material (carpet) with the cut-pile design;

Fig. 3 shows the weft cross-section of a known fabric in the form of covering material (carpet) using the single-cloth design;

20 Fig. 4 shows the weft cross-section of a fabric according to the present invention; and

Fig. 5 shows the warp cross-section of the fabric of Fig. 4.

Fig. 1 shows the weft cross-section of a known 25 covering material (carpet) 1 with the looped-pile design. The (base) cloth consists of filling warp threads 2, weft threads 3, binding warp threads 4, and pile threads 5.

Fig. 2 shows the weft cross-section of the covering material (carpet) 1 of Fig. 1, but with the pile threads 5 30 cut open at 6, resulting in the known cut-pile design.

Fig. 3 shows the weft cross-section of a known flat-cloth carpet design 7, in which the carpet design consists solely of warp threads 8 and 9 and weft threads 10. The types of thread used for this are, for example, 35 coir, sisal, paper, wool and the like.

Fig. 4 shows a double-cloth fabric 11 in accordance with the invention, sectioned through the weft threads 12 and 13 of the lower cloth 14 and upper cloth 15, respectively. In addition to the weft threads 12, the lower cloth

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14 contains filling warp threads 16 and binding warp threads 17. The upper cloth 15 furthermore comprises pile warp threads 18 and 19, the pile warp threads 19 firmly joining the upper cloth 15 to the lower cloth 14, due to 5 the fact that these pile warp threads 19 also extend through the lower cloth 14 and at the underside of the lower cloth 14 run beneath the weft threads 12.

Fig. 5 shows the double-cloth fabric 11 according to the invention, sectioned through the warp threads 16, 10 17, 18 and 19. It can be seen in this figure that the overall fabric is woven together in a very firm and compact manner.

This design provides fabric according to the present invention which is designed as covering material or 15 carpet with a large number of advantages over conventional carpet designs, such as:

- a reduction in the weight of thread material of up to 20 to 30%, owing to the more compact flat weaving,
- a greater stability,
- 20 - it is possible to use a different material,
- a greater range of variations in patterning,
- the carpet is easier to maintain,
- it combines a number of favourable characteristics of hard floors with a number of favourable charac-
- 25 teristics of carpet.

These favourable characteristics include:

- minimal roll resistance, as with hard floors,
- anti-slip properties of carpet,
- favourable acoustic qualities of carpet (greater sound 30 absorption),
- easy to sweep clean like hard floors,
- resistant to moisture and therefore readily usable in damp rooms, like hard floors.

So-called rods may be used in the upper layer of 35 the fabric according to the invention. The advantage of doing so in the covering material(carpet) is that extra emphasis is possible by means of an open pile of the said upper cloth.

In the fabric according to the invention, both the

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warp system 16, 17, 18, 19 and the weft system 12, 13 comprise a plurality of thread systems, the warp thread system 16, 17, 18, 19 preferably comprising at least four thread systems. Particularly in covering material, this has 5 the advantage that the colour-determining threads can be used as far as possible for selection in the transverse (weft) direction. It is then possible:

- quickly to change colour and thus to work with production series of minimal size, or even order-10 linked production series; in this way the stock can be considerably limited,
- to extend the patterning possibilities with weft effect.

In preferred embodiments of the fabric according to 15 the invention:

- the warp thread system 18, 19 and weft thread system 13 of at least the upper cloth 15 consist of very wear-resistant material,
- synthetic fibres are used for the warp threads 16, 17, 20 18, 19 and weft threads 12, 13, and
- polypropylene is used for the said synthetic fibres.

The advantages of carpet designed in this manner are that a very stable and wear-resistant carpet is produced, to which dirt does not stick, which is easy to 25 clean and over which it is easy to roll or slide, for example on office chairs. The carpet is preferably designed as a wall-to-wall carpet.

Due to the particular features of the fabric according to the invention, it is also very suitable for 30 use in conveyor belts, as a geotextile (for example as a reinforcement in road building and dyke building), in protective material (for example bullet-proof vests) or other industrial applications where the particular properties of the fabric provide an advantage.

35 Finally, it should be expressly emphasized that a preferred embodiment of the fabric according to the invention is described above and that with further modification variations in the binding with regard to patterning are possible without departing from the

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protective scope of the patent.

CLAIMS

1. Fabric woven in the form of a cloth, which is designed as a double-cloth structure, comprising a lower cloth and an upper cloth, both woven with a system of warp and weft threads, the lower cloth and upper cloth being
5 joined together by means of binding warp threads, characterized in that the fabric is designed as a flat cloth and in that the binding warp threads (19) of the upper cloth (15) also extend through the lower cloth (14) and, at the top side and the underside of the fabric, run
10 respectively over the weft threads (13) of the upper cloth (15) and under the weft threads (12) of the lower cloth (14).
2. Fabric according to claim 1, characterized in that both the warp thread system (16, 17, 18, 19) and the weft
15 thread system (12, 13) comprise a plurality of thread systems.
3. Fabric according to claim 2, characterized in that the warp thread system (16, 17, 18, 19) comprises at least four thread systems.
- 20 4. Fabric according to one of claims 1 - 3, characterized in that the warp threads (18, 19) and weft threads (13) of at least the upper cloth (15) consist of wear-resistant material.
5. Fabric according to one of claims 1 - 4, characterized in that synthetic fibres are used for the warp
25 threads (16, 17, 18, 19) and the weft threads (12, 13).
6. Fabric according to claim 5, characterized in that polypropylene is used for the synthetic fibres.
7. Fabric according to one of claims 1 - 4, characterized in that natural fibres are used for the warp
30 threads (16, 17, 18, 19) and the weft threads (12, 13).
8. Fabric according to claim 7, characterized in that horse-hair is used.
9. Fabric according to one of the preceding claims,
35 designed as covering material, in particular for covering floors, walls, furniture and the like.
10. Fabric according to one of the preceding claims

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used in conveyor-belt material.

11. Fabric according to one of the preceding claims
used as geotextile.

12. Fabric according to one of the preceding claims
5 used in protective material.

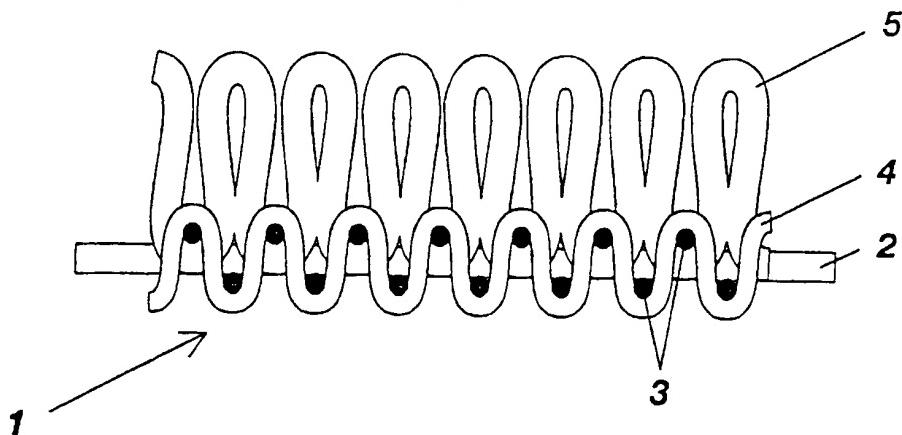
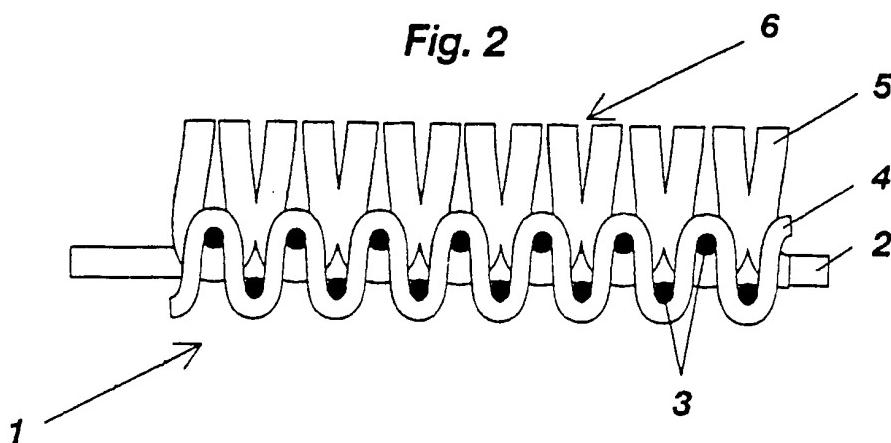
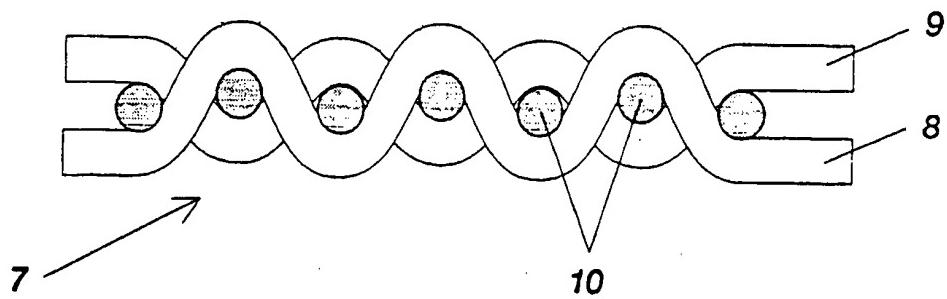
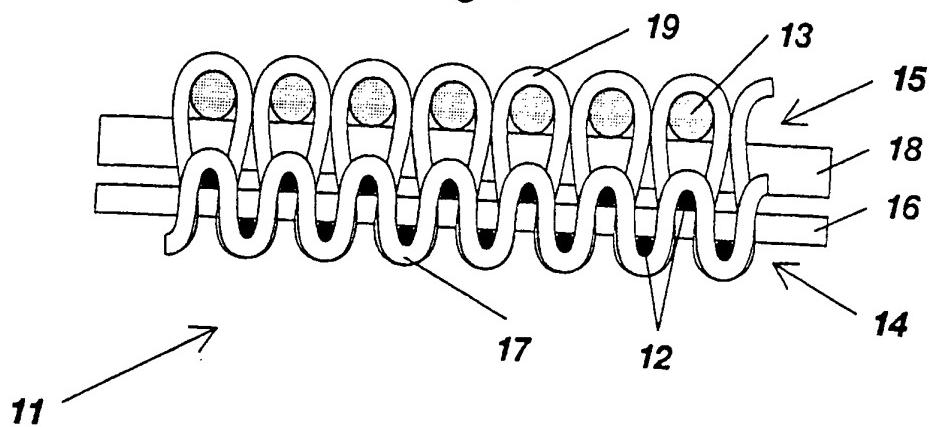
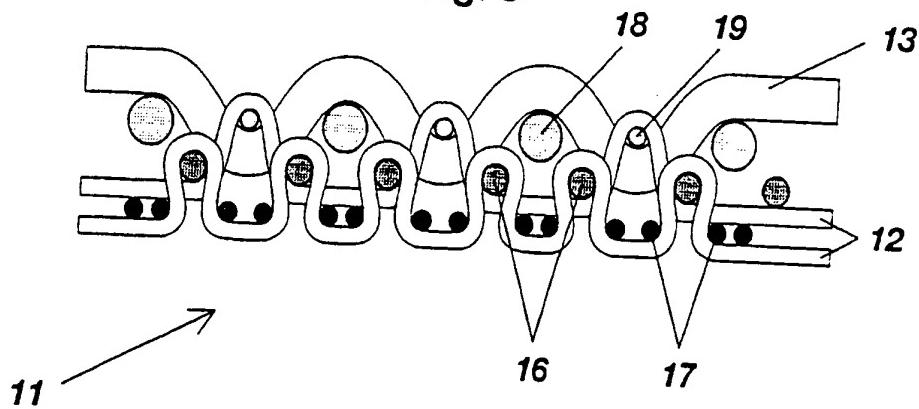
Fig. 1*Fig. 2**Fig. 3*

Fig. 4*Fig. 5*

INTERNATIONAL SEARCH REPORT

Inter	national Application No
PCT/NL 97/00492	

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 D03D11/00																			
B. FIELDS SEARCHED According to International Patent Classification (IPC) or to both national classification and IPC IPC 6 D03D Minimum documentation searched (classification system followed by classification symbols)																			
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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)																			
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category</th> <th style="width: 80%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 10%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>NL 21 413 C (KONINKLIJKE VEREENIGDE TAPIJTFABRIEKEN) 15 February 1929 cited in the application</td> <td>1-3</td> </tr> <tr> <td>A</td> <td>NL 36 308 C (KONINKLIJKE VEREENIGDE TAPIJTFABRIEKEN) 15 April 1935 see the whole document</td> <td>1-3</td> </tr> <tr> <td>A</td> <td>NL 48 729 C (KONINKLIJKE VEREENIGDE TAPIJTFABRIEKEN) 15 January 1940 see the whole document</td> <td>1-3</td> </tr> <tr> <td>A</td> <td>EP 0 508 332 A (SUPERBA) 14 October 1992 see column 2, line 17 - line 38; figure 1</td> <td>1, 4-6</td> </tr> <tr> <td>E</td> <td>NL 1 002 750 C (VINKEN) 1 December 1997 see the whole document</td> <td>1-9</td> </tr> </tbody> </table>		Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	NL 21 413 C (KONINKLIJKE VEREENIGDE TAPIJTFABRIEKEN) 15 February 1929 cited in the application	1-3	A	NL 36 308 C (KONINKLIJKE VEREENIGDE TAPIJTFABRIEKEN) 15 April 1935 see the whole document	1-3	A	NL 48 729 C (KONINKLIJKE VEREENIGDE TAPIJTFABRIEKEN) 15 January 1940 see the whole document	1-3	A	EP 0 508 332 A (SUPERBA) 14 October 1992 see column 2, line 17 - line 38; figure 1	1, 4-6	E	NL 1 002 750 C (VINKEN) 1 December 1997 see the whole document	1-9
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No	
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 21413	C	NONE	
NL 36308	C	NONE	
NL 48729	C	NONE	
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